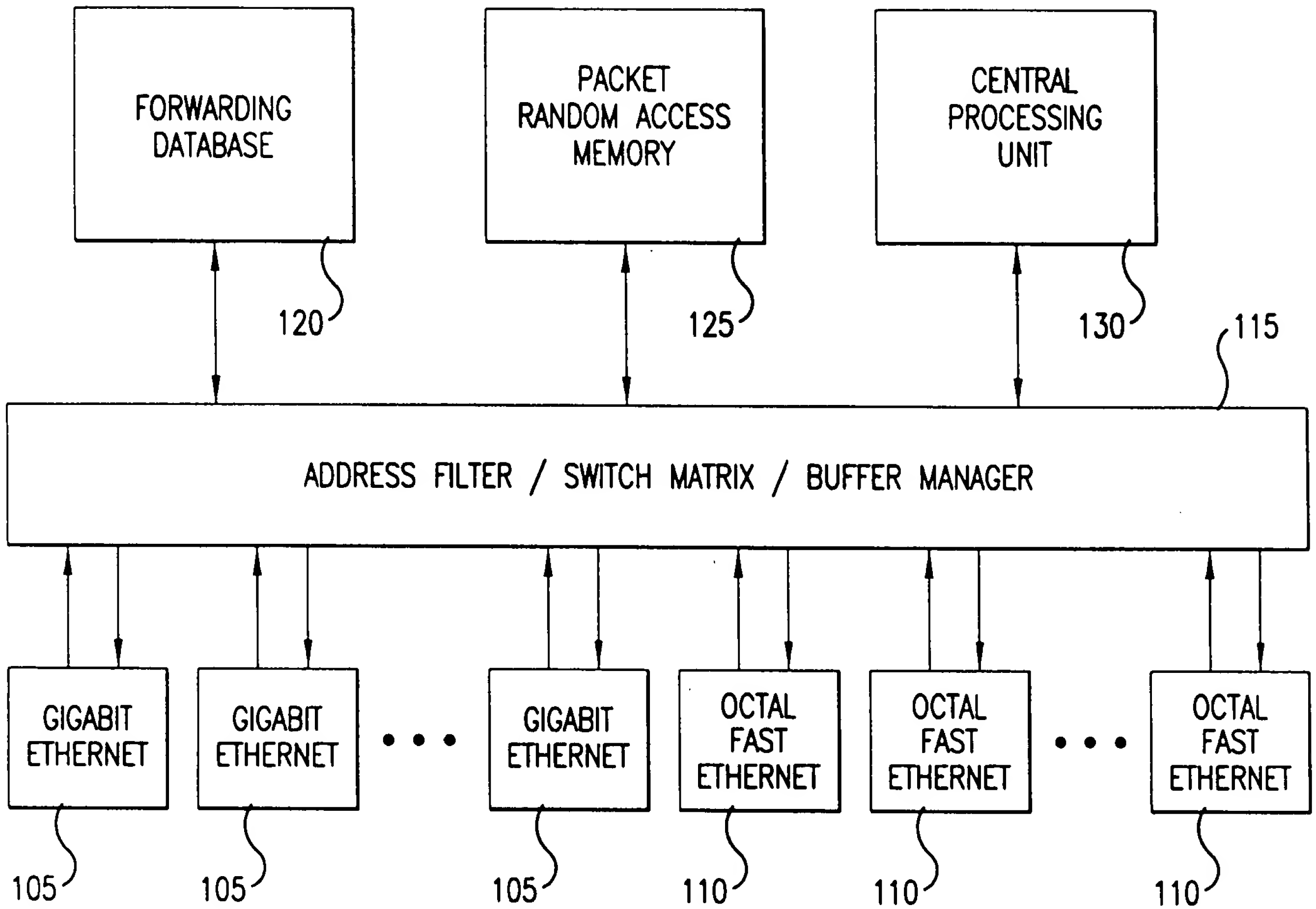
FORWARDING DATABASE
PACKET RANDOM ACCESS MEMORY
CENTRAL PROCESSING UNIT
120
125
130
115
ADDRESS FILTER / SWITCH MATRIX / BUFFER MANAGER
GIGABIT ETHERNET
GIGABIT ETHERNET
GIGABIT ETHERNET
OCTAL FAST ETHERNET
OCTAL FAST ETHERNET
OCTAL FAST ETHERNET
105
105
105
110
110
110

FIG.1A

100

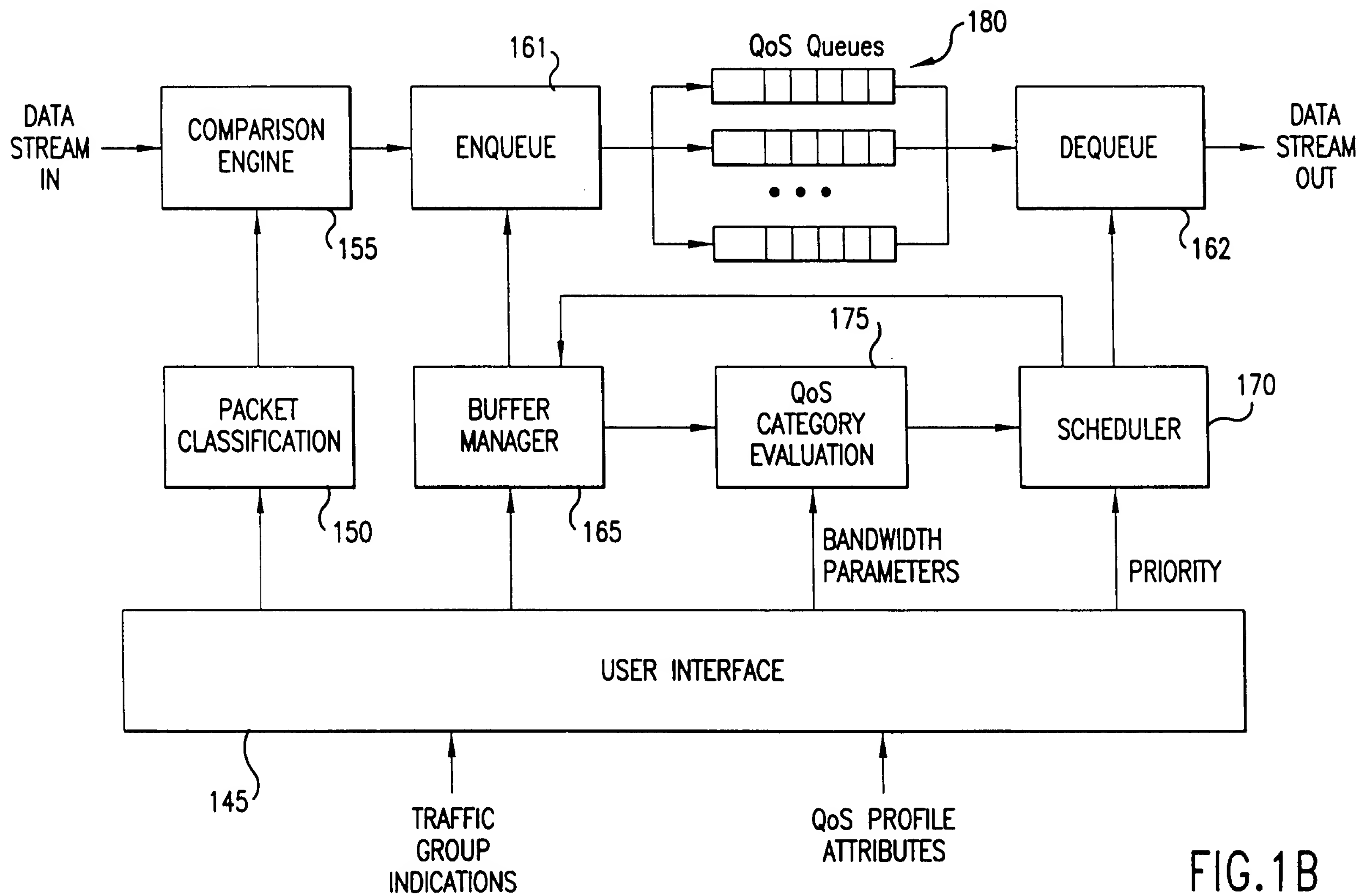
DATA
STREAM
IN
COMPARISON
ENGINE
155
ENQUEUE
161
QoS Queues
180
DEQUEUE
162
DATA
STREAM
OUT
PACKET
CLASSIFICATION
150
BUFFER
MANAGER
165
175
QoS
CATEGORY
EVALUATION
SCHEDULER
170
BANDWIDTH
PARAMETERS
PRIORITY
USER INTERFACE
145
TRAFFIC
GROUP
INDICATIONS
QoS PROFILE
ATTRIBUTES

FIG.1B

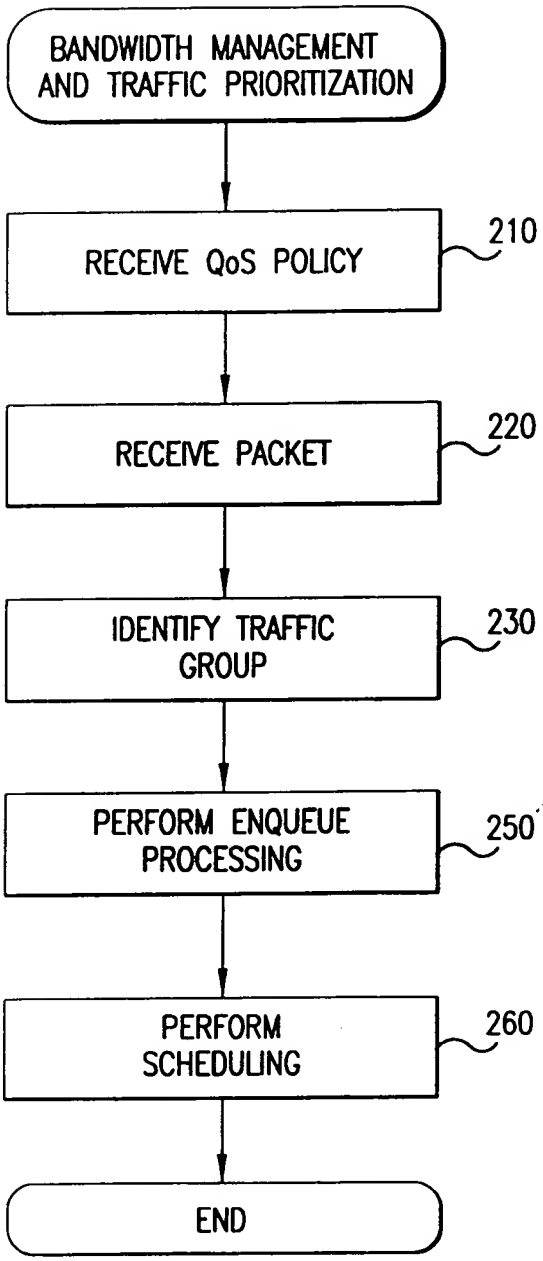
BANDWIDTH MANAGEMENT AND TRAFFIC PRIORITIZATION
RECEIVE QoS POLICY
210
RECEIVE PACKET
220
IDENTIFY TRAFFIC GROUP
230
PERFORM ENQUEUE PROCESSING
250
PERFORM SCHEDULING
260
END

FIG.2

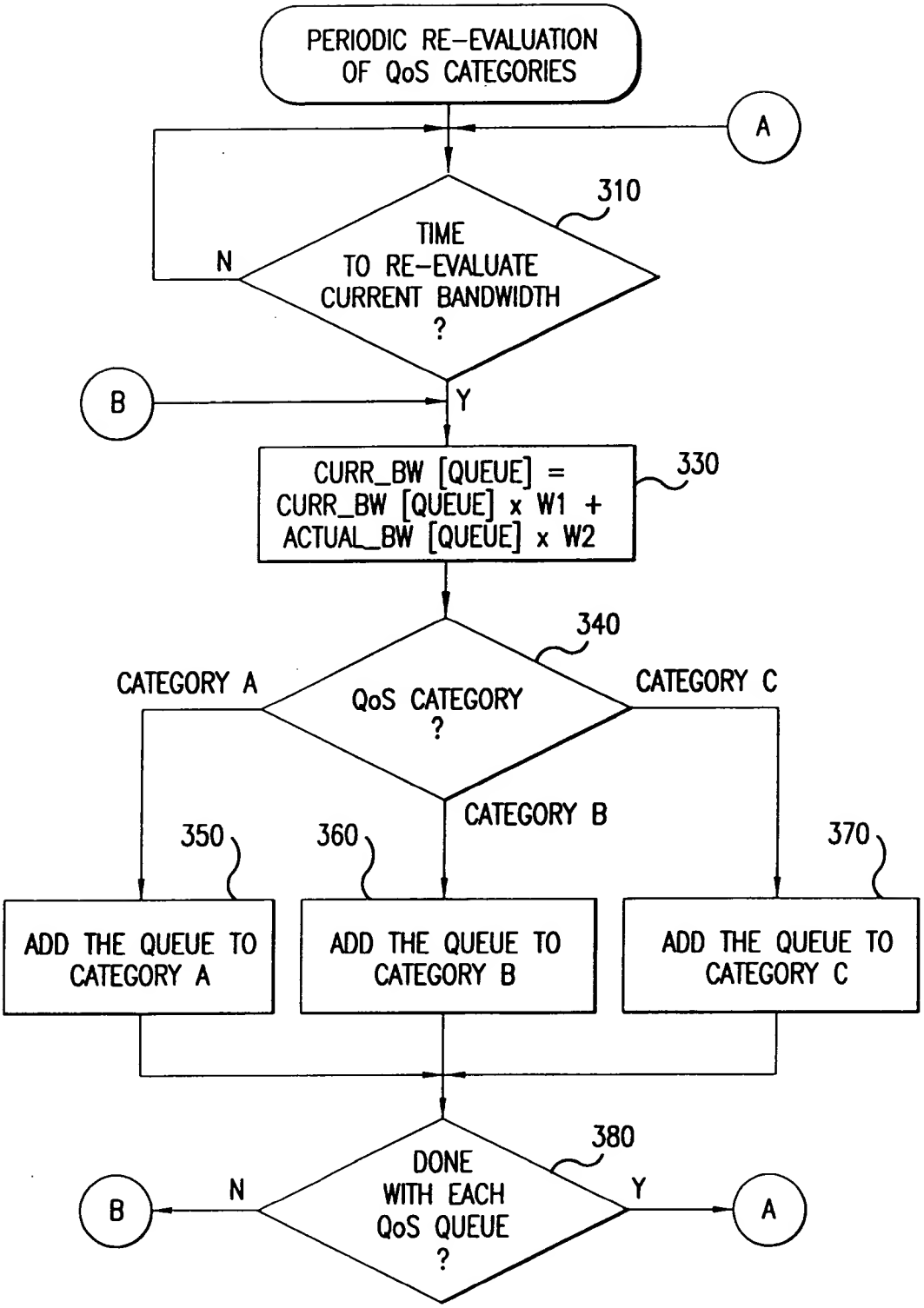
PERIODIC RE-EVALUATION OF QoS CATEGORIES
A
310
TIME TO RE-EVALUATE CURRENT BANDWIDTH ?
N
B
Y
CURR_BW [QUEUE] = CURR_BW [QUEUE] x W1 + ACTUAL_BW [QUEUE] x W2
330
340
CATEGORY A
QoS CATEGORY ?
CATEGORY C
CATEGORY B
350
360
370
ADD THE QUEUE TO CATEGORY A
ADD THE QUEUE TO CATEGORY B
ADD THE QUEUE TO CATEGORY C
380
DONE WITH EACH QoS QUEUE ?
N
Y
B
A

FIG.3

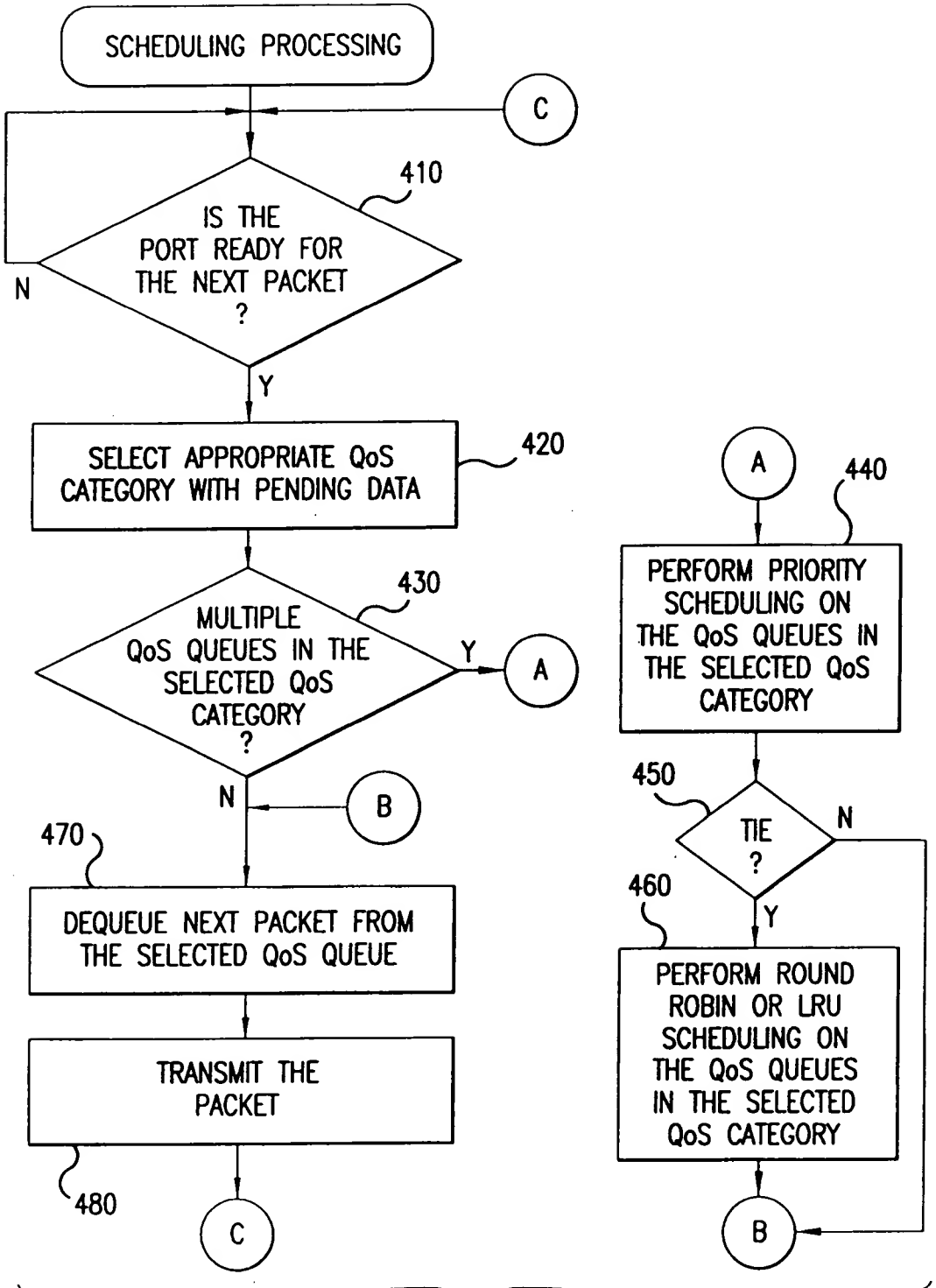
SCHEDULING PROCESSING
C
410
IS THE PORT READY FOR THE NEXT PACKET ?
N
Y
SELECT APPROPRIATE QoS CATEGORY WITH PENDING DATA
420
430
MULTIPLE QoS QUEUES IN THE SELECTED QoS CATEGORY ?
Y
A
N
B
470
DEQUEUE NEXT PACKET FROM THE SELECTED QoS QUEUE
TRANSMIT THE PACKET
480
C
A
440
PERFORM PRIORITY SCHEDULING ON THE QoS QUEUES IN THE SELECTED QoS CATEGORY
450
TIE ?
N
460
Y
PERFORM ROUND ROBIN OR LRU SCHEDULING ON THE QoS QUEUES IN THE SELECTED QoS CATEGORY
B

FIG.4